



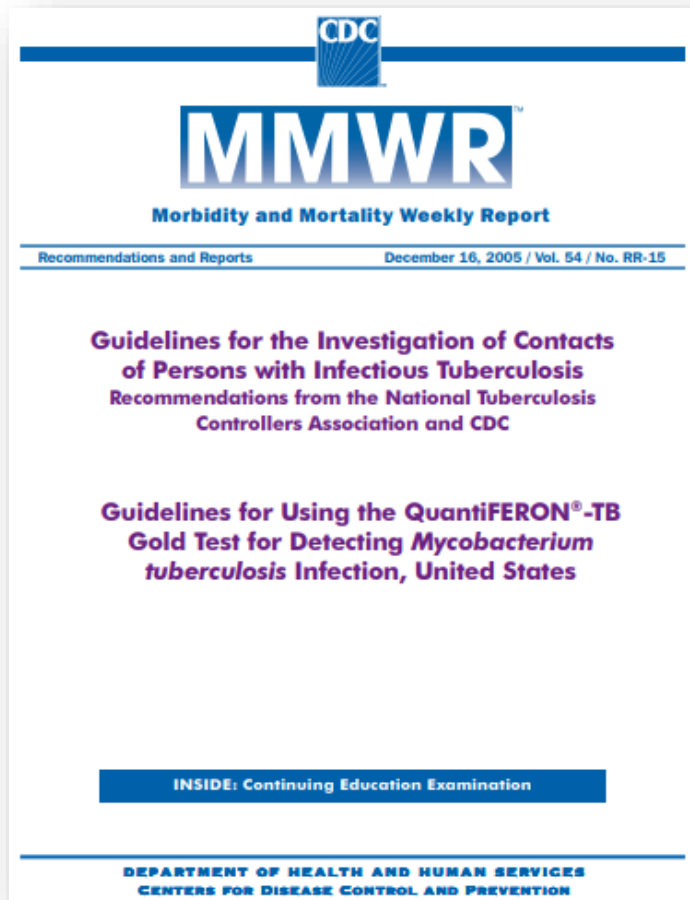
Contact Investigation Tools

World TB Day Polycom
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Contact Investigation Timeline

Activity	Time period
Initial interview to initiate CI	1-3 business days
High priority contact to smear +	Contacted w/in 7 business days
	Evaluated w/in 5 business days of contact
High priority contact to smear -	Contacted w/in 7 business days
	Evaluated w/in 10 business days of contact
Re-interview of client	W/in a week and ongoing throughout CI
Initial electronic submission of 502 form	W/in 4 weeks of initiating CI
Final 502 submission	After CI complete and contacts treated
Summary of congregate setting	After CI complete and contacts treated

Guidelines for the Investigation of Contacts of Persons with Infectious Tuberculosis



Nursing Directives/Guidelines Tuberculosis Contact Investigation



NURSING DIRECTIVES/GUIDELINES

SUBJECT/TITLE: Tuberculosis Contact Investigation

SECTION: Standards of Care

SUMMARY: The investigation of persons exposed to infectious tuberculosis (TB) clients and treatment of those found to be infected are important components of TB control and elimination strategies within the United States.

BRIEF BACKGROUND: Contact investigations are complicated undertakings that require hundreds of interdependent decisions, the majority of which are made on the basis of incomplete data and dozens of time-consuming interventions. These actions may include those related to decisions to initiate a contact investigation, assign priorities to contacts, the evaluation and treatment of contacts, expansion of investigations, and communication through the public media. Factors such as the extent of disease in the index client, the duration of exposure, proximity of the individuals, and air circulation during the exposure all influence the likelihood of transmission to any given contact. Other medical factors including immunosuppression in the contact can also influence the likelihood of infection or disease following an exposure.

It is beyond the scope of this document to cover all situations that may arise during an investigation of any one individual or community. Additional considerations may come into play for certain populations. All nurses involved in contact investigations should have immediate access to guidelines, policies and procedures published by the Centers for Disease Control and Prevention (CDC) and the Virginia Department of Health (VDH), Division of Disease Prevention, TB Control and Prevention program (DDP-tb).

PROCEDURE/DIRECTIVE:

Contact Investigation, Management and Follow-up of Contacts

- Contact investigation is the responsibility of the local health department. Services related to the investigation and evaluation of contacts are provided free of charge. Refer to the current VDH Eligibility Guidelines.
- A contact investigation should be initiated if the index client has smear positive, confirmed or suspected pulmonary, laryngeal or pleural TB.
- For a contact investigation of a smear negative case, identification of high-priority contacts should be undertaken, and evaluation of those contacts should be initiated.

Determining the Need for a Contact Investigation and Prioritizing Response

Determining the Need for a Contact Investigation and Prioritizing Public Health Response

Contact investigations are complicated undertakings that require hundreds of interdependent decisions, the majority of which are made on the basis of incomplete data and dozens of time-consuming interventions.

The investigation of those exposed to infectious cases of active tuberculosis (TB) disease is an important strategy in the control and elimination of TB in the United States. Whenever a new TB case or suspect is identified, public health action should be taken to determine the need for a contact investigation as well as to prioritize the identification and evaluation of persons exposed.

This document is a guideline and a tool to assist public health staff in prioritizing response based on characteristics of the index case, the vulnerability of those exposed and the potential sites where transmission may have occurred. It cannot cover all possibilities that might be encountered in each investigation. Greater effort should be expended to completing the evaluation and the initiation of LTBI treatment of higher risk contacts before pursuing further efforts to evaluate and treat medium risk contact. A decision to expand an investigation to lower priority contacts is based on the results of testing those at high or medium priority.

Using Table 1, locate the row that best describes the case characteristics of the client for whom a contact investigation is being considered.

1. Locate the row in column one that corresponds to the index case characteristics. Identify and evaluate the high priority contacts listed in the selected row. Include contacts from all potential transmission sites, not just the client's 'home'.
2. **Sputum smear negative cases:** *A smear negative case with cavitary disease requires an investigation and prioritizing contacts the same as for a smear positive case* (MMWR-Vol.54/RR-15 pg 12, Fig 2). Additionally, an index case assessment may lead to the conclusion that a more extensive investigation is warranted than would normally be conducted for a client with negative sputum smears. Information to analyze includes: duration of symptoms, radiography, treatment with any antibiotics (especially fluoroquinolones), and any medical care visits (including physicians, clinics, emergency rooms and hospital admissions) for potentially related symptoms.
3. **Table 2** provides guidance for time limits in various size settings to determine if a contact should be included in the investigation based on cumulative exposure time.
 - a. For some exposed persons, the **cumulative** length of environmental exposure determines an individual's need for evaluation even if no other risk factor is present.
 - b. These are approximate time-frames. A review of environmental factors such as room size, ventilation, and number of persons in the space is used to determine the priority for contacts in all investigations.
4. Analyze the results of the initial round of testing after all identified high priority contacts have been evaluated or evaluation attempts have been exhausted AND treatment has been initiated or initiation attempts have been exhausted. If results indicate a higher than expected positivity rate, expand the investigation to medium priority contacts. Resources must be available to adequately evaluate and offer treatment to any additional lower priority contacts.
5. Contact TB Control for technical assistance related to any contact investigation (804) 864-7906.

Table 1

Assignment of Contact Evaluation Priority Based on Case Characteristics			
Case Characteristics	Investigation and Evaluation Priority		
Pulmonary, pleural or laryngeal	High Priority	Medium Priority	Low Priority
<ul style="list-style-type: none"> Any of the following scenarios: <ul style="list-style-type: none"> • AFB smear positive • Cavitary lesion or CXR or CT regardless of smear status 	<ul style="list-style-type: none"> • Household contacts • Anyone under 5 yrs old • Contacts with Medical Risk Factors: HIV, TNF alpha blockers, ESRD, long-term steroid use, cancer treatments or other immune compromising condition • Contacts exposed during a medical procedure: Bronchoscopy, sputum induction or autopsy • Contacts in a congregate setting (LTC, Detention facility) OR • Contacts exceeding environmental exposure limits for high priority contacts (See Table 2) 	<ul style="list-style-type: none"> • Anyone 5-15 yrs old who does not meet one of the high priority criteria OR • Contacts exceeding environment exposure limits for medium priority contacts (See Table 2) 	<ul style="list-style-type: none"> • Anyone other than those listed; only considered if expansion is warranted
<ul style="list-style-type: none"> • Smear negative • AFB CXR or CT consistent with TB and non-cavitary • Might be NAA and/or AFB culture positive 	<ul style="list-style-type: none"> • Anyone under 5 yrs old • Contacts with Medical Risk Factors: HIV, TNF alpha blockers, ESRD, long-term steroid use, cancer treatments or other immune compromising condition • Contacts exposed during a medical procedure: Bronchoscopy, sputum induction or autopsy 	<ul style="list-style-type: none"> • Household contacts • Contacts in a congregate setting (LTC, Detention facility) OR • Contacts exceeding environmental exposure limits for medium priority contacts (See Table 2) 	<ul style="list-style-type: none"> • Anyone other than those listed; only considered if expansion is warranted
<ul style="list-style-type: none"> Any of the following scenarios: <ul style="list-style-type: none"> • Suspected TB with Abn CXR or CT, not consistent with TB • AFB neg., rapid test neg., culture neg. 	None	<ul style="list-style-type: none"> • Household contacts • Anyone under 5 years old • Contacts with Medical Risk Factors: see above • Contacts exposed during a medical procedure 	<ul style="list-style-type: none"> • Anyone other than those listed; only considered if expansion is warranted
Extra-pulmonary	High Priority	Medium Priority	Low Priority
<ul style="list-style-type: none"> • Non-pulmonary TB with pulmonary disease ruled out 	None	None	None

Source: MMWR 2005;54 (No. RR-15)

Table 2

VDH recommendations for the cumulative time needed during the infectious period to assign the priority of contact based on environmental exposure				
Space size	Example	High Priority	Medium Priority	Low Priority
Very small	Car, small office, 150 sq. ft.	8 or more hours	4 to less than 8 hours	Less than 4 hours
Small/medium	Classroom, meeting room	24 or more hours	8 to less than 24 hours	Less than 8 hours
Medium/large	Cafeteria, small church	50 or more hours	24 to less than 50 hours	Less than 24 hours
Large	Gymnasium, auditorium	100 or more hours	50 to less than 100 hours	Less than 50 hours

The less time exposed → the lower the potential for transmission → the lower the priority for evaluation of the contact

Guidelines for Estimating the Start of the Infectious Period

Guidelines for Estimating the Start of the Infectious Period when Initiating TB Contact Investigations (CI)

These recommendations assume that: (a) a decision to initiate a CI was made; (b) a thorough initial client interview was performed; (c) at least one sputum sample was observed or induced; (d) sputum samples are high quality.

Additional epidemiologic or clinical factors may affect the start of the infectious period and should be considered on a case-by-case basis (e.g., delayed diagnosis, treatment w/floroquinolones, etc.) Contact TB Control for consultation.

Index Case Characteristics

TB Sx	Sputum Smear +	Cavitary	Estimated Start of Infectious Period
1. Yes	No	No	3 months before symptom onset or first positive finding (e.g., abnormal CXR consistent with TB disease), whichever is longer
2. Yes	Yes	Yes	3 months before symptom onset or first positive finding consistent with TB disease, whichever is longer
3. No	No	No	4 weeks before date of suspected diagnosis
4. No	Yes	Yes	3 months before first positive finding consistent with TB
a. Yes	Yes	No	VDH recommends following #1 above
b. Yes	No	Yes	VDH recommends following #1 above
c. No	Yes	No	VDH recommends following #4 above
d. No	No	Yes	VDH recommends following #4 above

Adapted from the Contact Investigation Guidelines, MMWR, 2005: 54 (No. RR-15): Table 2, p. 7

Effect of Index Patient Characteristics and Behaviors

TB Transmission

Effect of Index Patient Characteristics and Behaviors

Characteristics That Increase Infectiousness	Behaviors That Increase Infectiousness
Pulmonary, laryngeal or pleural TB AFB + sputum smear Cavitation on chest radiograph Adolescents or adult patient No or ineffective treatment of TB Disease	Coughing Sneezing Singing Laughing Close social network

Additional Points

1. Pleural & laryngeal disease sites are grouped with respiratory disease.
2. Sputum cultures can yield *M.tb* even when no lung abnormalities are apparent on a radiograph.
3. The significance for infectiousness of results from respiratory specimens other than expectorated sputum is undetermined. Experts recommend that these specimens be regarded as equivalent to sputum for determining infectiousness only if sputa cannot be obtained.
4. Patients with lung cavities typically are more infectious than patients with non-cavitary pulmonary disease.
5. Cough frequency and severity are not predictive of contagiousness.
6. Transmission from children aged <10 years is unusual. When transmission occurs, it is generally associated with the presence of pulmonary forms of disease typically seen in adults.
7. HIV infection has no effect on potential infectiousness. Each case must be evaluated individually.
8. When drug resistance is NOT present, TB patients rapidly become less contagious after starting effective treatment. However, the exact rate of decrease cannot be predicted.
9. Environmental conditions such as the size of the space and ventilation as well as the length of exposure must be considered when determining potential transmission.

Criteria for determining when a patient with pulmonary TB becomes non-infectious during treatment*

- Patient has negligible likelihood of multidrug-resistant TB (no known exposure to multi-drug resistant TB, no history of prior episode of TB with poor compliance during treatment and not from a country with a high incidence of resistance)
- Patient has received standard multidrug anti-TB therapy for 2-3 weeks. (For patients with sputum acid-fast smear results that are negative the threshold for treatment is 5-7 days).
- Patient has demonstrated complete adherence to treatment (e.g. is receiving directly observed therapy).
- Patient has demonstrated evidence of clinical improvement (e.g. reduction in the frequency of cough or reduction of the grade of the sputum AFB smear result).
- All close contacts of patients have been identified, evaluated, advised and, if indicated, started on treatment for latent TB infection. This criterion is critical especially for children aged <4 years and persons of any age with immune-compromising health conditions (e.g. HIV infection)
- While in hospital for any reason, patients with pulmonary TB should remain in airborne infection isolation until they 1) are receiving standard multidrug anti-TB therapy; 2) have demonstrated clinical improvement, and 3) have three consecutive AFB-negative smear results of sputum specimens collected 8-24 hours apart, with at least one being an early morning specimen.
- Hospitalized patients returning to a congregate setting (e.g. a homeless shelter, detention facility or nursing home) should have three consecutive sputum AFB-negative smear results collected >8 hours apart before being considered noninfectious.

*Adapted from Controlling Tuberculosis in the United States, MMWR 2005; 54(RR-12), page 9